AIRCRAFT STENCILING and MARKING MACHINE
TEST PLAN

Introduction: NAVAIR has successfully demonstrated the use of markings on support equipment, however this effort would further the usage by qualifying it for aircraft surfaces.

Several types of self-adhesive backing materials of various thicknesses have been identified and are candidates for demonstration/validation purposes on aircraft surfaces. The tests will utilize the Roland aircraft marking equipment. Prior to on-aircraft evaluations, the material will be laboratory tested to evaluate environmental durability, failure modes, and compatibility properties. The following tests will be conducted IAW appropriate standards.

I. **Weatherometer:** Decal material will be tested for 500 hours in the Xenon arc lamp artificial weathering chamber.

II. **Fluid Exposure**: Samples will be immersed in the following fluids and conditioned for the stated time/temperature:

JP-5: room temperature (RT), 7 days
Hydraulic fluid MIL-PRF-83282: 150F, 24 hours
Lube oil MIL-PRF-23699: 250F, 24 hours
Deicing fluid AMS1424: RT, 7 days
Aircraft cleaning compound MIL-PRF-85570: RT, 7 days
Distilled water: RT, 24 hours; 120F, 4 days; 150F, 7 days)
Peel-adhesion tests will be conducted over MIL-PRF-85285 after exposure.

III. **IR Reflectivity:** Test IAW section 4.6.3 of TT-P-2756

IV. **Peel Adhesion**: Separate tests conducted over MIL-PRF-85285 after conditioning at -60^0 F, RT, and 180^0F.

V. **Humidity Resistance**: 100% RH for 30 days at 120^0F.

VI. **Salt Spray:** Vinyl material will be subjected to a 2,000 hour and a 500 hour SO2 salt spray chamber test.

VI. **Demonstration/Validation:** One six-month carrier deployment on one of each aircraft: H-60, EA-6B, F-18 and a six-month deployment on a P-3.

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VII. **Equipment**: Two Roland Color Cam Pro PC-600 stencil machines will be provided by PPEP. One unit will be positioned at the LMTCE Jacksonville; the other unit will be placed in the Materials Protection Branch, AIR-4.3.4.1, Patuxent River, MD for use during laboratory testing of the vinyl material. Following successful completion of lab tests, the unit will be forwarded to NAS Whidbey Island for use by the selected demonstration/validation squadron(s).

VIII. **Publications:** Following successful completion of fleet evaluation stencil marking technology will be incorporated into the Paint Schemes and Exterior Markings for U.S. Navy and Marine Corps Aircraft MIL-STD 2161A.

IX. **Team Members:**

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PMAs & FSTs

PMAs and FSTs will be included in the testing formulation and approval process.

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X. POA&M:

ID	Task Name	Duration	Start	Finish
1	**Aircraft Stenciling and Marking**	**245 days**	**Wed 1/22/03**	**Tue 12/30/03**
2	State of the art comparisons	10 days	Wed 1/22/03	Tue 2/4/03
3	Procure equipment	15 days	Wed 2/5/03	Tue 2/25/03
4	Laboratory Testing	68 days	Wed 2/26/03	Fri 5/30/03
5	Identify fleet demonstration aircraft: F/A-18, EA-6B, H-60, P-3	10 days	Wed 2/26/03	Tue 3/11/03
6	Field evaluations	111 days	Mon 6/2/03	Mon 11/3/03
7	Post-deployment analysis	10 days	Tue 11/4/03	Mon 11/17/03
8	Final report	10 days	Tue 11/18/03	Mon 12/1/03
9	Revise MIL-STD-2161	30 days	Tue 11/18/03	Mon 12/29/03
10	Transition to fleet	1 day	Tue 12/30/03	Tue 12/30/03